

PROJECT DESCRIPTION

Tallahatchie National Wildlife Refuge is located in the delta region of Mississippi in Grenada and Tallahatchie Counties, approximately 2 miles east of the town of Philipp, on MS Highway 8. The refuge totals 4,199 acres and the bulk of this acreage was once agricultural lands. The refuge was established in 1991, and since that time approximately 1,700 acres have been reforested. The majority of the surrounding land is still being farmed annually. On the refuge, approximately 600 acres are currently in agriculture, with the remaining acreage (approximately 1,900 acres) in various types of aquatic habitats.

One of the dominant features on the refuge is Tippo Bayou which runs south through the refuge, and ultimately forms the southern boundary of the refuge. Tippo Bayou is one of the last unchannelized water bodies in the Mississippi Delta. However, over time it has been heavily impacted by agriculture, carrying a heavy silt load, as well as various contaminants. Numerous sloughs and oxbows still exist along Tippo Bayou, representing remnants of habitat that was once abundant in the area. Current hydroperiods for these units vary from drying annually to permanently flooded. Several of these areas have retained their connectivity to Tippo Bayou to varying degrees, while others appear completely isolated from any water source.

Nothing was known regarding the status of crayfish in Tippo Bayou or in most of the delta region. Mississippi boasts 63 species of crayfish, with 17 of those species endemic to Mississippi (occurring nowhere else). This lack of knowledge regarding species inhabiting the aquatic resources of Tallahatchie NWR includes multiple taxa (reptiles, amphibians, fish (particularly non-game species), invertebrates). In order to manage and protect the aquatic resources, it is vitally important to first identify what those resources are. This inventory is the first step in

developing a protection/management plan for Tippo Bayou.

To undertake a thorough inventory of crayfish, fish, mussels, amphibians, and reptiles in Tallahatchie National Wildlife Refuge using standardized techniques that would allow a baseline for future monitoring.

From October 31, 2011 – August 1, 2012 staff from North Mississippi Refuges Complex (NMRC), Private John Allen National Fish Hatchery (PJANFH), Natchitoches National Fish Hatchery (NNFH), and the Baton Rouge Fisheries Office (BRFO) sampled aquatic habitats on Tallahatchie National Wildlife Refuge for mussels, crayfish, fish, amphibians, and reptiles.

Minnow trap sampling

Due to low water levels, only three of the five original sites (75, 76, 77, 80, 82) had sufficient water to trap during the first time period (Oct. 31, Nov. 4), and only one of those was wadable, allowing it to be sampled with dip nets and seines. During the February and March sampling periods, all five sites were sampled using both minnow traps and dip nets. Due to similar species captured during previous sampling periods, only one of the original sites and two new sites (25 different in terms of habitat and were added in an attempt to add additional species to the species list for the refuge.

Minnow trap sampling consisted of setting out 20 aluminum minnow traps (cylindrical, with a funnel at each end) baited with commercial crayfish bait at each site. Traps were checked daily, any animals captured were removed, and the traps replaced at the same location. Captured reptiles and amphibians were identified, photo-vouchered, and released on site. Any individuals found dead were collected, fixed in 10% formalin

and preserved in 70% EtOH. Captured fish were sorted and a minimum of 2 specimens per species (when possible) were preserved in a 10% formalin solution. Crayfish were preserved in 70% EtOH. A small number of crayfish were released on site. These were predominantly red swamp crayfish (*Procambarus clarkii*), which are easily identified and a few small individuals that were deemed too small to attempt identification. All crayfish and minnow identifications were confirmed by aquatic ecologists with the U.S. Forest Service Southern Research Station in Oxford, Mississippi.

Dip net sampling

Dip net sampling was done in conjunction with minnow trap sampling. Staff used dip nets to sample the site for a period of 15 – 20 minutes, depending on the number of participants. The goal was a total of about 60 minutes of sampling effort per site. (Three people sampling for 20 minutes equals 60 minutes of sampling effort.) There was some variation in sampling time, however, with total sampling effort per site ranging from 45 – 80 minutes. All crayfish, minnow, amphibians, and reptiles collected were held until the end of the sampling session. At the end of the sampling, animals were identified and released (amphibians and reptiles) or preserved (fish, crayfish) as described above.

During the first sampling periods, seine nets were used either alone or in conjunction with dip nets. This technique was deemed to be ineffective due to the large amount of debris in the water, coupled with the underwater cypress knees and unstable bottoms in the majority of the units.

Area Searches

Area searches were used to find mussels in or near water bodies on the refuge. This technique involved walking through an area, either in the water, near water, or in areas that were seasonally flooded. All dead mussels encountered were collected for identification. Live mussels were identified in situ and released. Mussel identifications were verified by Wendell Haag, U.S. Forest Service or Tony Brady, U.S. FWS.

Electrofishing

Electrofishing was conducted solely on Tippo Bayou and Long Branch. A Smith Root GPP 9.0 electrofishing unit was set at 680 volts (DC) at 120 pps. An 80% gain delivered an average sustained 6.4 amps to the water. Survey transects consisted of cruising along at trolling speed with for approximately 10 minutes at a time. Fish seen were identified and tallied. The majority were not captured. Transects were run in both open water and along the shoreline, to insure all habitats were sampled.

Gill nets

Only Tippo Bayou was sampled using gill nets. Nets used were experimental gill nets (100' long, 10' deep monofilament with 3 panels of equal length of 3", 4" and 5"), and were deployed in several areas along the south end of Tippo, during a single netting event. A total of 6 areas were sampled with a total netting effort of 20 hours.

Water Quality Monitoring

During each dip net sampling event, water quality parameters were measured and recorded. This included water temperature, pH, conductivity, total dissolved solids, and dissolved oxygen. These parameters were not measured in Tippo Bayou or Long Branch.

ACCOMPLISHMENTS

A total of 9 mussel species, 5 crayfish species, 40 fish species, 12 amphibian species, and 13 reptile species were captured or otherwise recorded. Of these species, 17 species of fish were found only within Tippo Bayou and Long Branch. These data are preliminary and are subject to verification. Samples were sent to the U.S. Forest Service, Southern Research Station for confirmation, and final results for the last sampling period are pending. This report will be updated and finalized if needed upon receipt of information from the U.S. Forest Service.

PARTNERS

Crayfish, Herp, Mussel and Minnow Sampling -- Tallahatchie NWR

FY2011

North Mississippi Refuges Complex (NMRC),
Private John Allen National Fish Hatchery
(PJANFH), Natchitoches National Fish Hatchery
(NNFH), U.S. Forest Service, and the Baton Rouge
Fisheries Office (BRFO)

MORE INFORMATION

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Summary of species collected by site during the inventory effort on Tallahatchie National Wildlife Refuge, Grenada and Tallahatchie Counties, Mississippi, October 31, 2011 – August 1, 2012

Species	25	13	75	76	77	78	80	82	Tippo/Long Branch
Mussels									
Unionidae						X			
			X				X		X
									X
									X
							X		X
							X	X	X
						X	X		
Sphaeriidae			X	X	X		X		
Crayfish									
Cambaridae			X	X	X			X	
							X		
							X		
	X						X		
	X	X	X	X	X		X	X	
Fish									
Polyodontidae									X
Lepisosteidae									X
									X
									X
Amiidae			X		X				
Clupeiformes									X
									X
Cyprinidae									X
							X		
Catostomidae									X
			X	X					
									X
									X
Ictaluridae							X		
									X
									X
									X
Esocidae				X					
Aphredoderidae			X	X	X		X		
Fundulidae		X	X	X			X	X	

Crayfish, Herp, Mussel and Minnow Sampling -- Tallahatchie NWR

FY2011

	<i>chrysotus</i>								
	Northern starhead topminnow, <i>F. d. dispar</i>		X						
	Blackstripe topminnow, <i>F. notatus</i>		X						
Poeciidae	Western mosquitofish, <i>Gambusia affinis</i>		X	X	X			X	X
Atherinidae	Inland silverside, <i>Labidesthes beryllina</i>								X
Elassomatidae	Banded pygmy sunfish, <i>Elassoma zonatum</i>		X	X	X	X			X
Centrarchidae	Flier, <i>Centrarchus macropterus</i>			X	X	X		X	
	Green sunfish, <i>Lepomis cyanellus</i>			X	X			X	X
	Warmouth, <i>L. gulosus</i>		X	X	X			X	X
	Orange-spotted sunfish, <i>L. humilis</i>							X	X
	Bluegill, <i>L. macrochirus</i>		X					X	X
	Dollar sunfish, <i>L. marginatus</i>		X					X	
	Longear sunfish, <i>L. megalotis</i>		X					X	X
	Redear sunfish, <i>L. microlophus</i>		X			X			X
	Bantam sunfish, <i>L. symmetricus</i>		X	X	X			X	X
	Largemouth bass, <i>Micropterus salmoides</i>		X	X					X
	White crappie, <i>Poxomis annularis</i>								X
	Black crappie, <i>P. nigromaculatus</i>							X	X
Percidae	Swamp darter, <i>Etheostoma fusiforme</i>			X		X			
Sciaenidae	Freshwater drum, <i>Aplodinotus grunniens</i>								X
Amphibians									
Bufonidae	American toad, <i>Bufo americanus</i>							X	
	Fowler's toad, <i>B. fowleri</i>	X							
Hylidae	Cricketer frog sp., <i>Acris</i> sp.	X	X	X	X	X	X	X	X
	Green treefrog, <i>Hyla cinerea</i>							X	X
	Gray treefrog sp., <i>H. chrysoscelis/versicolor</i>			X					X
Ranidae	Bullfrog, <i>Lithobates catesbeiana</i>			X	X	X			X
	Bronze frog, <i>L. clamitans</i>			X		X		X	X
	Pickerel frog, <i>L. palustris</i>			X					
	Southern leopard frog, <i>L. sphenoccephala</i>	X		X	X	X			X
Amphiumidae	Three-toed amphiuma, <i>Amphiuma tridactylum</i>				X	X			
Sirenidae	Western lesser siren, <i>Siren intermedia</i>				X				X
Salamandridae	Central newt, <i>Notophthalmus viridescens</i>				X	X			
Reptiles									
Alligatoridae	American alligator, <i>Alligator mississippiensis</i>				X				
Kinosternidae	Common musk turtle, <i>Sternotherus odoratus</i>			X				X	
Emydidae	Red-eared slider, <i>Trachemys</i>			X					

	<i>scripta</i>									
Scincidae	Ground skink, <i>Scincella lateralis</i>					X			X	
	Skink sp., <i>Eumeces</i> sp.			X	X	X				
Colubridae	Mississippi green water snake, <i>Nerodia cyclopion</i>			X	X	X				
	Diamondback water snake, <i>N. r. rhombifer</i>	X								
	Yellowbelly water snake, <i>N. erythrogaster flavigaster</i>				X					
	Broad-banded water snake, <i>N. fasciata confluens</i>	X			X	X		X	X	
	Graham's crayfish snake, <i>Regina grahamii</i>	X								
	Western ribbon snake, <i>Thmanophis p. proximus</i>					X				
	Rough green snake, <i>Opheodrys aestivus</i>				X					
Viperidae	Cottonmouth, <i>Agkistrodon piscivorus</i>	X		X	X					